



AMSATTM

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NEWSLETTER

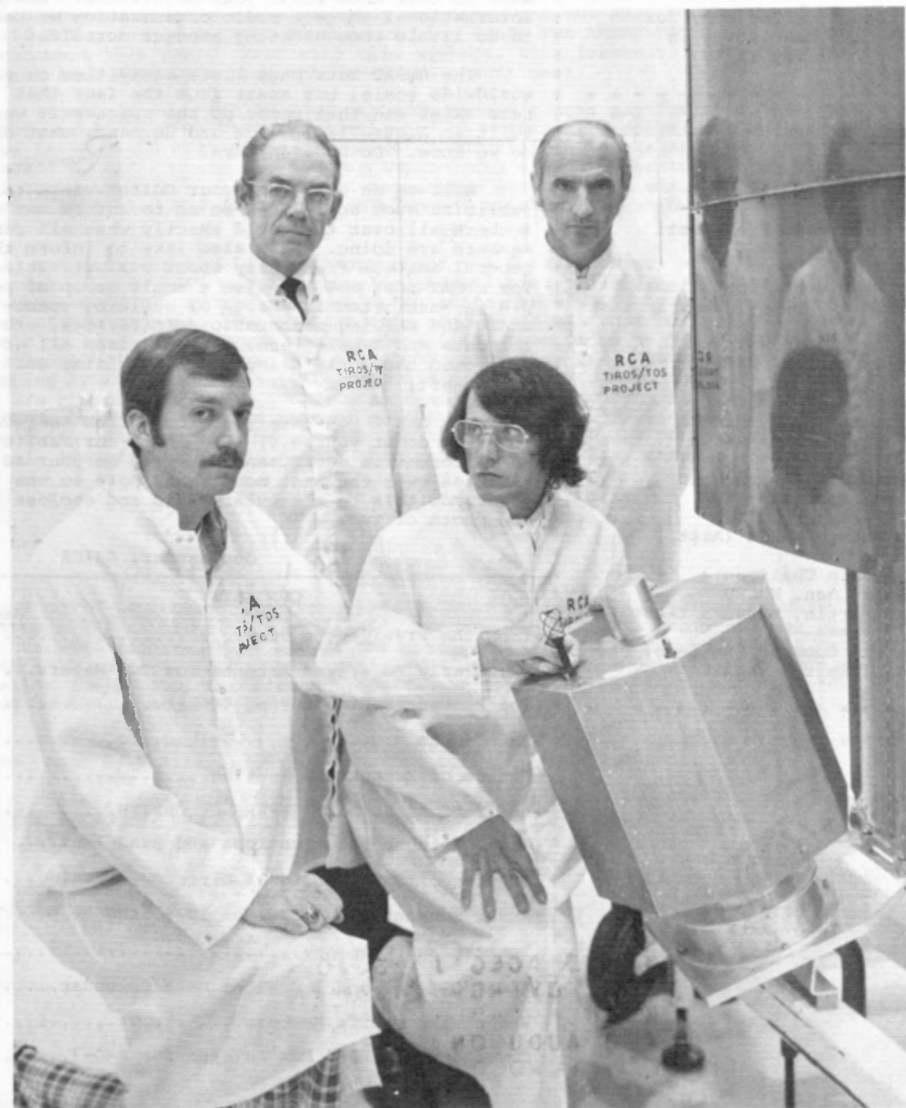
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Deadline for copy for
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1 May 1975

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EDITORIAL

How much do you know about the activities of other AMSAT-affiliate organizations? How much do they know about your activities? For an international amateur radio organization we seem to do little communicating amongst ourselves.

The AMSAT Nets page lists activities on a worldwide scale, but apart from the fact that nets exist and that parts of the spacecraft were built in Australia, Canada and Germany, what else do we know. Do we even care?

Well we do care, and your Editor wants to publicize such activities so as to inform our members all over the world exactly what all our members are doing. We'd also like to inform the general amateur fraternity about our activities, for AMSAT does not comprise a small group of people in Washington in charge of building spacecraft and mailing membership certificates, orbital data and Newsletters. It comprises all of us around the world using and publicizing our spacecraft.

Why don't you have your local club secretary (or even do it yourself) send in to our Publicity and Information department a report on your activities over the last month, and more to the point, do this on a regular basis and enclose the odd photo or two.

Joe Kasser, G3ZCZ

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AMSAT

FROM THE PRESIDENT'S DESK

by Perry Klein, K3JTE

As announced in the last issue of the *AMSAT Newsletter*, the Board of Directors has approved an increase in the annual membership dues to \$10 U.S. per year (\$20 U.S. for member societies), effective July 1.

The AMSAT annual dues were originally set at \$5 per year when AMSAT was first organized in 1969, and have remained the same now for over six years. Over the same period, AMSAT's expenses have increased from about \$300 in 1969 to over \$49,000 in 1974! At the end of 1969 AMSAT had around 250 members. Today we have over 2,000, with the result that expenses are now in excess of \$24 per member per annum.

Even at \$10 per member, dues will cover less than half of AMSAT's \$47,000 budgeted operating expenses for 1975. The rest of AMSAT's funds come from grants, donations, and proceeds from miscellaneous items such as first day covers, orbit books, slide sets, etc. For this year the ARRL has again agreed to contribute \$6,000 toward AMSAT's administrative expenses, and the ARRL Foundation is considering a \$20,500 grant from Eitel-Hoover matching funds for AMSAT-OSCAR 6 and 7 operations management this year. Even with this support, this leaves \$21,000 that must be sought from dues and other sources to make ends meet.

It should be clear by now that each member's dues pay for more than just the *AMSAT Newsletter*; we have two satellites to maintain in operation, and we still have to continue with the development of future OSCAR packages. All this requires funds! In addition to \$20,500 for AMSAT-OSCAR 6 and 7 operations management, \$12,300 are expected to go toward membership services and administrative expenses during 1975, and \$14,400 to the development of satellite hardware for future satellites.

For those particularly unhappy about the dues increase, we would encourage you to renew for as many years in advance as possible. This must be done before July 1 to take advantage of the old dues rate. Life Membership, available for a contribution of \$50 or more, is a particularly good bargain. From our point of view, it would be ideal if everyone would become Life Members, as this would greatly simplify the bookkeeping and reduce the burden of processing renewals here. We are still sending AMSAT-OSCAR 6 satellite communicator's pins to each new Life Member, and we are now offering both AMSAT-OSCAR 6 and the new AMSAT-OSCAR 7 satellite pins to Life Members contributing \$100 or more until July 1st, 1975. For members outside the United States, Life Membership has the added advantage of requiring only a single transfer of funds, rather than converting currency annually. Consider it.

FOR THE RECORD

FIRST NORTH AMERICAN RECEPTION OF AMSAT-OSCAR 7 should be credited to VE2BYG and not to K7BBO as previously published, because since the launch story was published it has been reported that AOS of the spacecraft at VE2BYG was at 1843:10 and AOS was 1845 ± 15 secs at VE3QB, both stations being linked on the Spacecraft Command Station (Telephone) Conference Circuit. Sorry, Dave, but that beats out your 1846:37 time. Anyone claim an earlier time?

KH6IHP is claiming a first for a phone patch through an amateur radio satellite, made by KH6IHP and W0NQQ on orbit 8810 of A-O-6 (19 Sept. 1974).

KH6IHP, W6OAL and W0NQQ are believed to have taken part in a first international three-way mobile contact via an amateur radio spacecraft on Orbit 8860 of AO6 (23 Sept. 1974).

W4ART and G3ZCZ are claiming a land first mobile-in-motion contact through an amateur spacecraft. The claim is in respect to their contact as G3ZCZ/M/W3 with W3HUC on AMSAT-OSCAR 6 orbit 10260 on 13 January 1975. Does anybody dispute their claim?

A HOME-BREW CIRCULARLY-POLARIZED ANTENNA FOR TWO-METER OSCAR WORK

by Ron Dunbar, WB9NLF

Below is a drawing of a simple, easy to construct, 146 MHz OSCAR antenna. I have found that elevation control is not necessary if the antenna is permanently mounted at a fixed elevation angle of 45°, which gives excellent coverage down to 10° above the horizon, where I then switch to the normal 2 meter array. It only takes about 2½ minutes for the satellite to get up to 10° elevation on any equator crossing from 35° to 105° at this location, so not much will be lost if this is the only station antenna available.

Because of the circularity of this antenna's pattern, those annoying polarization fades observed on the linear antenna previously in use are completely eliminated. The antenna in the below drawing provides approximately 9 dB gain, right-hand circular polarization.

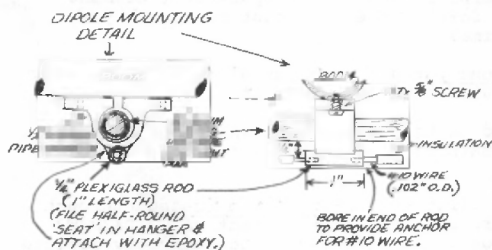
One of the rules I observed in the materials list used for this construction was to restrict that list to items which are commonly available. A somewhat better match than the calculated 1.15:1 SWR probably could have been obtained by using an oddball size conductor in the dipole, but the #10 wire specified is obtainable in any hardware or electrical store, so it was used instead. (I left the plastic insulation on, except where it joined the feedline, and at the end of the ½" tubing.) I used the technique of keeping the end of the aluminum tubing covered with heavy oil both while I cleaned the oxide off with steel wool and while tinning it with ordinary solder. If you have not tried this trick, you will find that it works amazingly well . . . much better than all the special 'aluminum solders' I have tried in the past.

The method of mounting the 1/8" aluminum elements was borrowed from John Fox, (WJLER) and not only contributes to a simple 2-3 hour construction, but also eliminates the corrosion-generated noise which is created by poor element-to-boom contact inherent in all "through-the-boom" construction techniques (unless the elements are soldered to the boom).

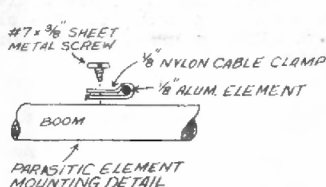
I used a 1" aluminum for the boom (with a relatively thin wall), resulting in a compact 3 pound antenna. Mine is mounted on a rectangular aluminum plate (¼" thick), which is in turn mounted to the vertical mast. It is not necessary to orient the elements vertically and horizontally; mine is mounted like an 'X' to minimize interaction with the vertical mast and the 435 MHz helix mounted directly beneath it.

The pattern is clean and broad, which reduces the antenna aiming chores, while providing more than enough gain to bring OSCAR 7 passband signals up to 50 dB out of the noise at this location.

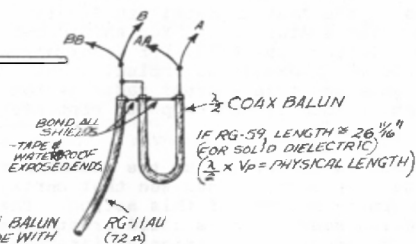
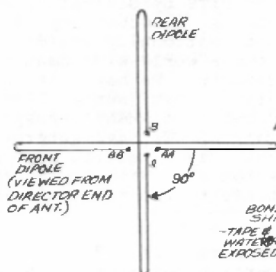
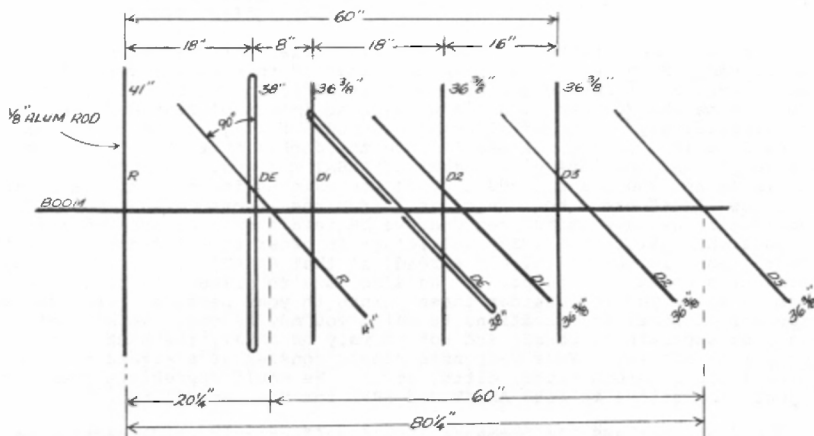
This antenna should bring me up to very near 100% perfect print on the 145.975 teletype telemetry when used in conjunction with the Active Filter AINT Terminal Unit. I hope to have an article out on the T.U. in the very near future to encourage more OSCAR users to try their hand at telemetry reception.



Ron Dunbar, WB9NLF
10 So. 486 Curtis Lane
Naperville, Illinois 60540

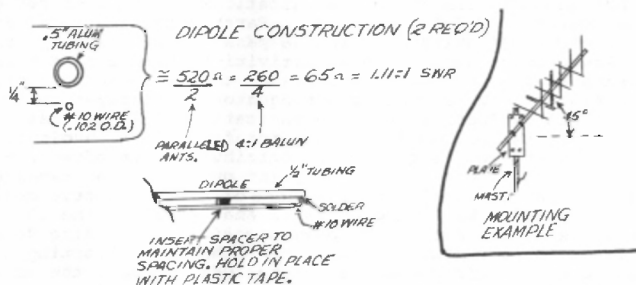


USE MINIMUM 8' BOOM TO PROVIDE REAR EXTENSION FOR MOUNTING.



NOTE:

CONNECTIONS FROM 4:1 BALUN TO DIPOLES CAN BE MADE WITH 300 Ω TWIN-LEAD. (DO NOT TAPE TWIN-LEAD TO METAL)



146 MHz OSCAR ANTENNA

(RIGHT-HAND CIRCULAR)

WB9NLF/W0MJS 1/75

THE AMATEUR RESTRUCTURING DOCKET

by Tom Clark, WA3LND/WØIUF
Ray Soifer, K2QBW

Last December the FCC published Docket 20282 entitled Restructuring of the Amateur Radio Service. To all who have studied this docket carefully, it is clear that if even a portion is adopted, amateur radio in the U.S.A. will never be the same. Since the FCC realized the widespread impact of restructuring, they took the extraordinary action of allowing a 6-month filing period, with the deadline set as June 16. In the six weeks since the docket "hit the street," the authors have sought the opinions of a number of AMSAT members, not only in the U.S.A. but also in Japan, where a no-code license has existed for several years, and the U.K. where the "GB's" are a no-code class. From the inputs of a number of concerned individuals, we have formulated what we believe should be AMSAT's response. We are publishing it in the *AMSAT Newsletter* in order to solicit comments from other members, both in the U.S.A. and abroad, so that AMSAT's final filing may truly represent a consensus viewpoint. We also want to present it to the membership in order to allow you to consider these points in your personal responses and in the responses of other organizations to which you may belong. We strongly urge you to file your separate responses and not to rely on AMSAT, the ARRL, etc. to present your points of view. Your responses should consist of a signed original and 14 copies (Xerox, carbon paper, ditto, etc.). We would appreciate your sending copies of your submissions to both AMSAT and ARRL for the record, too.

We feel that AMSAT's comments should reflect only the impact of restructuring on amateur space communications, and as such we have avoided any comments on such questions as the 250 watt Novice power limit, the loss of RTTY by General class licensees, etc. If you have strong feelings on these points, we would hope that you would make them in your own response. We have also intentionally avoided any discussion of the 220 MHz band situation, since 220 is not a world-wide amateur band, and hence cannot support any amateur satellite activity. We have also assumed that the FCC's actions on the Amateur-satellite Service Docket (Number 19852) will not materially affect the status quo. You should refer to AMSAT's response in the June 1974 *AMSAT Newsletter*, pp. 8-12, for information. We have interpreted "amateur space communications" liberally as including not only satellite communications, but also moon-bounce and even amateur radio astronomy. With these provisos, here are the salient points of our proposed response to the restructuring docket:

(1) AMSAT has no objection, in principle, to the establishment of a "no-code" Communicator class license. In fact, we can see that certain benefits may accrue to the amateur radio fraternity because of this action. The potential influx of new people into the dwindling amateur ranks could breathe new life into our hobby and give us a much stronger bargaining position at international allocations conferences, such as the 1979 WARC. However, certain details of the proposal will cause serious problems for those amateurs interested in any aspect of amateur space communications.

(2) Within the amateur radio community there are several activities which rely heavily on space. These include the Amateur-satellite Service, as exemplified by AMSAT, the small but exciting effort in communications by means of reflection from the moon (hereafter called E-M-E for Earth-Moon-Earth communications) and even a limited number of amateurs experimenting in the passive "listen-only" discipline of radio astronomy. Amateurs engaged in these activities share a bond with other experimentally-minded amateurs working in areas of tropospheric scatter, ionospheric scatter, meteor scatter, auroral and trans-equatorial propagation, etc., all of which may be categorized as "weak-signal" communications. In general, amateurs experimenting with these techniques are at the forefront of technological development and have, in the past, made significant contributions to advancing the state-of-the-art in communications technology. We point out a few outstanding examples of this as precedent. The original demonstrations of trans-Atlantic communications in the HF bands in the 1920's were made by radio amateurs. In the 1930's, amateurs began pushing the state-of-the-art in VHF communications, including demonstrations of the capabilities of FM as a viable modulation technique. Starting in 1939, and throughout the War, a U.S. radio amateur singlehandedly brought the science of radio astronomy to the forefront. During the War, amateurs made a number of invaluable contributions to the development of radar and field communications equipment. In the late 1940's, it was radio amateurs who demonstrated that SSB was a very efficient mode for point-to-point HF communications. The 1950's brought the discovery of meteor scatter communications by radio amateurs. In the 1960's, and 1970's amateurs have been expanding into space and have now successfully completed

seven artificial satellites, four of which were for the purpose of relaying communications and two of which still continue to operate. Amateur ingenuity has also demonstrated that communications with relatively modest equipment can be made via the E-M-E mode and stations with such capability now exist in all corners of the world, from Africa to Alaska, from Sweden to New Zealand. The provisions of spectrum space for such experimental activities should be mandatory, and we fear that if Docket 20282 is adopted without change, such activities will be severely compromised.

(3) At present, the activities mentioned in (2) are conducted primarily in the following frequency bands: 29.4-29.6 MHz; 144-146 MHz; 431-438 MHz; 1290-1300 MHz; and 2300-2310 MHz. Some additional activity takes place in the bands 50.0-50.2 MHz, 220.0-220.1 MHz, and in all the amateur bands above 2300 MHz. Most of these frequencies are not heavily used by amateurs not participating in weak-signal communications. In fact, the population is quite sparse when compared to bands such as 28.5-29.0 MHz. Much of the protection that currently exists for these weak-signal activities comes from self-policing within the amateur ranks. The majority of present U.S. amateurs respect the importance of these activities and permit them to be carried out without any undue interference.

(4) With the advent of artificial satellites, E-M-E communications, and even the other weak-signal communications modes, the VHF (and higher) bands can no longer be regarded as "local" or "line-of-sight." Through the AMSAT-OSCAR 6 (AO-6) and AMSAT-OSCAR 7 (AO-7) satellites we have observed that incidental communications, not directed towards the satellite, have been retransmitted to an "audience" that is far wider than that intended by the original transmitting stations. That this "audience" includes areas outside the U.S.A. demonstrates that the Commission's actions on this docket can have international ramifications. In most foreign countries, as well as within the U.S.A. and the neighboring countries of Canada and Mexico, amateurs have worked hard on voluntary band-planning, particularly in those portions of the amateur bands which are allocated for amateur use on a world-wide basis. Figure 1 shows the band-plan adopted by the International Amateur Radio Union (IARU) Region 1 (Europe) for the 144-146 MHz band. The allocation of the 144-144.5 MHz segment for weak-signal activities and the allocation of 145.845-146.00 MHz segment to space activities should be noted. These voluntary allocations in Europe are compatible with voluntary band-planning in the U.S. and the rest of the world. To adopt changes which would abrogate these international amateur agreements would show bad faith on the part of U.S. amateurs and cause harmful interference to weak-signal activities in other countries. Figures 2 and 3 present the European band-plans for the 430-440 MHz and 1296-1298 MHz band segments which could also be affected by adverse action on Docket 20282.

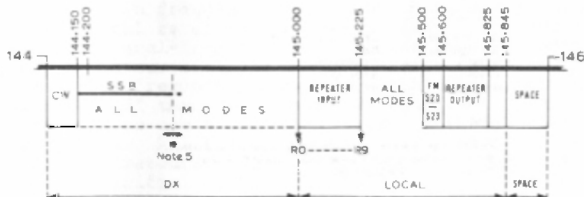


Figure 1. 144-146 MHz European Band-Plan.

144 146MHz

144 000 - 144 010

144 100

144 150

144 200

144 600

145 000 - 145 225

145 300

145 500

145 500 (S20); 145 525 (S21)

145 550 (S22); 145 575 (S23)

145 600 - 145 825

EME

RANDOM MS

CENTRE FREQUENCY REGIONAL BEACONS

SSB CALLING

RTTY (DX)

REPEATER INPUT - RO to R9

RTTY (LOCAL)

MOBILE CALLING

FM SIMPLEX

FM SIMPLEX

REPEATER OUTPUT

FOOTNOTES

1. Established simplex frequencies on repeater output channels may be retained.
2. The segment 145 250 - 145 500MHz may be allocated, if desired to FM channels.
3. No regional planning for low power beacons (erp of 5W or less).
4. Area coverage by regional beacons (erp of 50W or greater).
5. The upper limit of ssb is flexible.

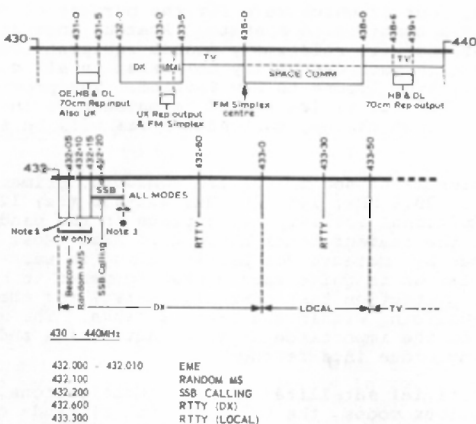


Figure 2. 430-440 MHz European Band-Plan.

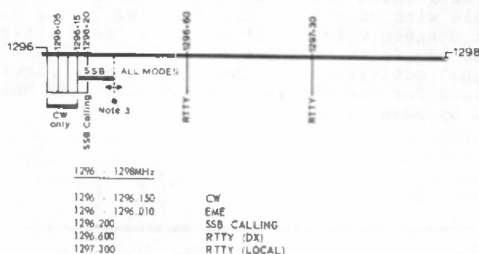


Figure 3. 1296-1298 MHz European Band-Plan.

(5) AMSAT is, by its very nature, an international organization, with approximately 30% of its members residing outside the U.S.A. We have requested comments from certain of our foreign member societies on their experiences with "no-code" Communicator-like licenses. In Japan, Communicator-like licensees have access to all VHF bands, are permitted F3 and 3A3j(SSB) and 6A3(AM) modes with 10 watts input, and the use of terrestrial repeaters is prohibited. The Japanese 2-meter band extends only from 144 to 146 MHz. The availability of a no-code license has brought in more than 200,000 new Japanese amateurs, and the resulting interference levels are quite high. Weak-signal activity has been seriously compromised, despite voluntary band-planning attempts by the Japanese Amateur Radio League (JARL). In the U.K. a no-code license has existed for several years, with a rather strict technical examination. The no-code licensees are permitted only operation above 144 MHz. Our members in the U.K. have reported problems exist with weak-signal activities owing to general band crowding and to the fact that the no-code licensees have little sympathy for those who wish to use telegraphy to extend their communications range.

(6) AMSAT has many very talented individuals who are significantly advancing the state-of-the-art. One of our prime responsibilities is to ensure the advancement of communications technology at VHF and higher frequencies. On the contrary, we see that the Communicator class license is intended primarily for individuals who have a desire to communicate rather than to experiment with electronics. Thus, we foresee that the vast majority of the Communicator licensees will purchase their equipment ready-made for their requirements, or perhaps modify equipment originally intended for the commercial 2-way FM market. Such equipment as is now available is only suited to operation at frequencies below 450 MHz. At frequencies of 1215 MHz and higher, equipment is quite specialized and its construction and operation require a skill level far in excess of that attributed to the Communicator class licensee in the Commission's proposal. It would seem that the intent of the proposal would require that these microwave frequencies be reserved for the Technician and Experimenter class skill levels.

(7) Docket 20282 proposes that the Communicator class be given only F3 emission privileges. AMSAT wishes to point out that F3 emission is an inefficient use of the limited bandwidth and power available with the linear transponders used for relaying communications in the present AO-6 and AO-7 satellites, as well as all other satellites currently planned. Our self-policing efforts have been successful at discouraging the use of F3 on satellites. AMSAT would further suggest that satellite communications are well beyond the technical scope of the Communicator class as presented in the docket.

(8) In view of all the above points, AMSAT requests that the Commission at least give protection to the Amateur-satellite Service and the other weak-signal activities by excluding Communicator class licensees from those segments currently used internationally for these activities, specifically 144.0-144.5 MHz, 145.8-146.0 MHz, 432.0-433.0 MHz, 435.0-438.0 MHz and all frequencies above 1215 MHz.

(9) The docket further proposes that the Communicator class licensees will be permitted up to 250 watts input power. AMSAT feels that this is excessively high. It would appear that the intent of the Commission is to establish the Communicator class as a short-range "local" service license only. The experience of amateurs using F3 emission on VHF frequencies with power levels in the 10-30 watt range is that mobile-to-mobile communications up to about 10 miles, mobile-to-base communications up to about 25 miles, and base-to-base communications up to about 50 miles are quite reliable. When repeaters are used, it is not unusual to have coverage from 50-100 miles, even with a mobile station. The existing regulations (97.67(b)) specify that power in excess of the minimum required to sustain communications shall not be used. We are quite concerned about the impact of a large number of relatively high-powered stations on frequencies adjacent to those employed for weak-signal activities. Weak-signal receiving equipment frequently uses state-of-the-art technology to maximize signal-to-noise ratio; noise figures under 2dB are not uncommon in well equipped amateur stations at frequencies up through 432 MHz. These low-noise receivers are frequently more susceptible to problems of intermodulation and "front-end overload" than less sensitive equipment. It is not unusual for the weak-signal operator to use a large, high-gain antenna, either on a high tower or sited on high ground. All these factors require strict adherence to the "minimum power" rule by all amateurs. In the past amateurs have been self-policing, and problems, while not insignificant, have generally been worked out by "gentlemen's agreements." A large influx of relatively unskilled operators using high power would cause irreparable damage to weak-signal activities. The experience of our members both in Japan (where the power limit is 10 watts) and in the U.K. (where the power limit is 150 watts) indicate that our concern is well-founded. We therefore request that the Commission adopt power limitations no higher than 25 watts and preferably 10 watts for the Communicator class.

(10) In view of the discussion leading to points (8) and (9), AMSAT would like to note that even further frequency restrictions for the Communicator class may be desirable. We have already received reports from amateurs residing in heavily populated areas of severe interference problems from amateur F3 activity in the 146-148 MHz segment to amateurs monitoring the downlink signals from the AO-7 satellite in the 145.925-145.975 MHz range. If the Communicator class is established and given privileges on the 144 MHz band as a result of this docket, consideration should be given to restriction to a segment like 147-148 MHz. This would give additional protection to weak-signal activities and would also provide an incentive to Communicator class licensees who desire access to wider frequency allocations to upgrade to Technician or Experimenter licenses.

(11) AMSAT also wishes to express its concern regarding any opening of the upper 700 kHz of the ten-meter band (29.0-29.7) to Experimenter class licensees as this could lead to a substantial increase in the usage of the 29.4-29.7 MHz portion.

This segment is currently used for downlink and beacon frequencies for the AO-6 and AO-7 satellites, and such activity would be seriously jeopardized by a large influx of terrestrial point-to-point amateur activity. This frequency range was chosen for satellite use because of the low level of activity world-wide, particularly when contrasted with the segment between 28.5 and 29.0 MHz. Equipping for operation with the AO-6 and AO-7 satellites, with uplink frequencies of approximately 145.9 MHz and downlink frequencies of approximately 29.5 MHz, has proven a task within the scope of virtually any radio amateur since none of the equipment required is complex. Many amateurs have employed converted two-way FM equipment modified for telegraphy for uplink transmitters and conventional HF communications receivers for the reception of the satellite. Thus, the 145.9/29.5 MHz transponders have been an excellent training ground for amateur space activities. Through the cooperation of the American Radio Relay League and the Talcott Mountain Science Center, we have carried out extensive classroom demonstrations and have published and disseminated some 3000 curriculum study-guides for high school teachers. The success of this educational program has been due in large measure to the ease with which receiving equipment can be assembled for use at frequencies within the ten-meter band. We request that the Commission consider giving some measure of protection to this activity. This could be accomplished by eliminating the 29.4-29.7 MHz segment from the Experimenter's allocations.

(12) We disagree strenuously with the assertion in paragraph 9 of the Notice that "telegraphy is not a major communications mode in these frequency bands (above 29 MHz)." Well over half, and perhaps as much as three-fourths of all communications by amateur satellites is by means of telegraphy, and the rest consists of such narrow-bandwidth modes as SSB, SSTV, RTTY, etc. More than 90% of the E-M-E communications and at least 50% of the other weak-signal communications are by telegraphy, with SSB making up the balance. The implication in several places in the docket seems to be that there is an abrupt change in techniques from the HF bands to the VHF bands, with the VHF bands dominated by wide-bandwidth techniques such as FM, television, pulse modulation, etc. We find such distinctions highly artificial and detrimental to the Amateur Service. We have observed that most of the current users of the AO-6 and AO-7 satellites fall into two categories. The first includes the experimenters who are normally associated with VHF activity and who are presumably the types of amateurs envisioned for the Series B Technician and Experimenter class licenses. Some of our users of this type seldom, if ever, operate on the HF bands. The second includes users who are primarily HF operators, who are frequently avid "DXers," and who are presumably the types for the Series A licenses. For many of the second category, their satellite activities are their only form of participation in the VHF bands. We have observed that the intermingling of these two distinct types has been quite healthy for the furtherance of the Amateur Service. We suggest that the Commission consider the desirability of permitting both categories to operate through amateur satellites. We further request that examinations for both series contain questions on satellites and weak-signal activities.

(13) The filing on Docket 20282 by AMSAT assumes that the Commission's actions in its Amateur-satellite Service Proceeding (Docket 19852) will not be materially inconsistent with AMSAT's filing on the matter. It is our belief that these two matters are inter-related and that final action should not be taken in one independently of the other. For instance, we have assumed that the Commission, in response to Docket 19852, will not set up exclusive sub-bands for the Amateur-satellite Service and then require a special license certification for ground stations to operate in these sub-bands for the reasons pointed out in our filing on that matter. We have also assumed that stations in the Amateur Service will not be regarded as being in the Amateur-satellite Service if their equipment is used for communications with or through a properly licensed satellite operating in the Amateur-satellite Service.

Now that our ideas have been presented, the next step is up to you. AMSAT's Board has decided that our formal response on 20282 should reflect the views of the membership. We will be formulating our final response in May, for submission in June. We urge you to send us your comments, pro or con, on these ideas. From your responses we will forge AMSAT's response. Send your replies to:

AMSAT -- 20282
P. O. Box 27
Washington, D.C. 20044

(Continued on Page 22)

AMSAT NETS

In order to keep the satellite users in touch with one another and to provide information to newcomers, the following AMSAT nets meet regularly:

North American East Coast 75 Meter Net

Mondays 9:00 p.m. EDT (0100Z Tues)

3850 kHz LSB

Net Control W3ZM, W3TMZ and others

North American West Coast 75 Meter Net

Mondays 7:00 p.m. PDT (0200Z Tues)

3850 kHz LSB

Net Control W6OAL or W6EJJ

Note that East Coast and West Coast Nets are on the same frequency, so stations in between should be able to work both.

International 20 Meter Net

Sundays 1800Z*

14,280 kHz USB

Net Control W3ZM, W3TMZ or others

International 15 Meter Net

Sundays 1900Z

21,280 kHz USB

Net Control W3ZM, W3TMZ or others

Western Europe Net

Saturdays 1000Z

14,280 kHz USB

Net Control G3IOR

JA Net

Mondays 1300Z

3560 kHz LSB

Net Control JALANG

Southeast Asia Net

Thursdays 1300Z

14,320 kHz USB

Net Control JALANG or others

ZL Net

Mondays, Thursdays, Saturdays

1900 Local Time

3850 kHz LSB

Net Control ZL1WB

*G3IOR listens at 1730Z for European and African check-ins.

In addition, the frequencies 3850 kHz LSB and 14,280 kHz USB are designated as general watch frequencies for discussions of satellite matters following passes.

In the Washington area, AMSAT traffic is handled via 2 meter FM on 146.85 MHz simplex and through the AMSAT repeater WR3ABU (146.25 to 146.85 MHz).

In southern California, the WR6ACJ repeater (146.25 to 146.85 MHz) has been designated as an official medium for exchanging information relating to the amateur space program. It is suggested that those in other areas also adopt 85 simplex and the 25/85 repeater combination for satellite discussions. In those areas where such repeaters already exist, check with the present inhabitants of the channel to see if they would mind having their facility used for such a constructive purpose as satellite talk. If we all standardize on this frequency combination, it will be much easier to get in touch with one another when traveling.

In London, on Sunday at 1930Z, G8CSI is net control on 144.28 MHz FM.

Readers are requested to inform AMSAT about any corrections, additions or deletions to the above net schedules.

Bulletins of general interest to those interested in amateur satellites are transmitted regularly on OSCAR 6 reference orbits (first orbit of the Greenwich day) at approximately 10 minutes after ascending node. These bulletins are transmitted on a downlink frequency of approximately 29,490 kHz and can be received over most of eastern North America.

NOTICE OF MEMBERSHIP MEETING

In conjunction with the experimenters' meeting, there will be a general membership meeting held March 22, 1975, jointly sponsored by Goddard Space Flight Center Amateur Radio Club and AMSAT. It will be held at the Goddard Recreation Center, near Goddard Space Flight Center. For those who want to show up at 18:00, there will be a steak dinner, plus all the beer you can hold, for about \$7.00. The membership meeting will be held at the same place, starting about 20:30. We will have to have reservations in by March 18. Contact WA3LND directly or via W3ZM on the nets, or call the AMSAT office at (202) 488-8649 to make reservations. Attending will be DJ4ZC, VK3ZDH, VE3QB, VE3HD, VE2AO, and a number of others who made AO-6 and AO-7 possible. Come and show them your appreciation.

AMSAT-OSCAR REFERENCE ORBITS AND OPERATING SCHEDULE

AMSAT-OSCAR 6

Period = 114.99454 minutes

Increment = 28.7486 deg/orbit

Operating Schedule

2/10 ON (GMT Days)

EVENINGS

Monday, Thursday, Saturday

MORNINGS

Sunday (EVEN DAYS, Educational demonstrations only)

REV	DATE	TIME Z	LONG W
10961	MAR	10 0005.0	51.3
10974	MAR	11 0059.9	65.0
10987	MAR	12 0154.8	78.8
10999	MAR	13 0054.8	63.8
11012	MAR	14 0149.7	77.5
11024	MAR	15 0049.6	62.5
11037	MAR	16 0144.5	76.2
11049	MAR	17 0044.5	61.2
11062	MAR	18 0139.4	74.9
11074	MAR	19 0039.3	59.9
11087	MAR	20 0134.3	73.7
11099	MAR	21 0034.2	58.7
11112	MAR	22 0129.1	72.4
11124	MAR	23 0029.1	57.4
11137	MAR	24 0124.0	71.1
11149	MAR	25 0023.9	56.1
11162	MAR	26 0118.9	69.8
11174	MAR	27 0018.8	54.8
11187	MAR	28 0113.7	68.6
11199	MAR	29 0013.7	53.6
11212	MAR	30 0108.6	67.3
11224	MAR	31 0008.5	52.3

11237	APR	1 0103.5	66.0
11249	APR	2 0003.4	51.0
11262	APR	3 0058.3	64.7
11275	APR	4 0153.2	78.5
11287	APR	5 0053.2	63.5
11300	APR	6 0148.1	77.2
11312	APR	7 0048.0	62.2
11325	APR	8 0143.0	75.9
11337	APR	9 0042.9	60.9
11350	APR	10 0137.8	74.7
11362	APR	11 0037.8	59.6
11375	APR	12 0132.7	73.4
11387	APR	13 0032.6	58.4
11400	APR	14 0127.6	72.1
11412	APR	15 0027.5	57.1
11425	APR	16 0122.4	70.8
11437	APR	17 0022.4	55.8
11450	APR	18 0117.3	69.6
11462	APR	19 0017.2	54.5
11475	APR	20 0112.2	68.3
11487	APR	21 0012.1	53.3
11500	APR	22 0107.0	67.0
11512	APR	23 0007.0	52.0
11525	APR	24 0101.9	65.7
11537	APR	25 0001.8	50.7
11550	APR	26 0056.7	64.5
11563	APR	27 0151.7	78.2
11575	APR	28 0051.6	63.2
11588	APR	29 0146.5	76.9
11600	APR	30 0046.5	61.9

AMSAT-OSCAR 7

Period = 114.9448 ± 0.0002 minutes

Increment = 28.7362 deg/orbit

Inclination = 101.73

Operating Schedule

EVEN DAYS of year

Mode B

ODD DAYS of year

Mode A

WEDNESDAYS (Experiment and Bulletin use only. General communications not permitted. Days designated below by "X".)

MODE	REV	DATE	TIME Z	LONG W
A	1433	MAR	10 0137.1	74.1
B	1445	MAR	11 0036.4	58.9
AY	1458	MAR	12 0130.7	72.5
B	1470	MAR	13 0030.0	57.3
A	1483	MAR	14 0124.3	70.9
B	1495	MAR	15 0023.6	55.8
A	1508	MAR	16 0117.9	69.3
B	1520	MAR	17 0017.2	54.2
A	1533	MAR	18 0111.5	67.7
BY	1545	MAR	19 0010.9	52.6
A	1558	MAR	20 0105.2	66.1
B	1570	MAR	21 0004.5	51.0
A	1583	MAR	22 0058.8	64.5
B	1596	MAR	23 0153.1	78.1
A	1608	MAR	24 0052.4	62.9
B	1621	MAR	25 0146.7	76.5
AY	1633	MAR	26 0046.0	61.3
B	1646	MAR	27 0140.3	74.9
A	1658	MAR	28 0039.6	59.8
B	1671	MAR	29 0133.9	73.3
A	1683	MAR	30 0033.3	58.2
B	1696	MAR	31 0127.5	71.7
A	1708	APR	1 0026.9	56.6
BY	1721	APR	2 0121.2	70.1
A	1733	APR	3 0020.5	55.0
B	1746	APR	4 0114.8	68.5
A	1758	APR	5 0014.1	53.4
H	1771	APR	6 0108.4	66.9
A	1783	APR	7 0007.7	51.8
B	1796	APR	8 0102.0	65.3
AY	1808	APR	9 0001.4	50.2
B	1821	APR	10 0055.6	63.8
A	1834	APR	11 0149.9	77.3
B	1846	APR	12 0049.3	62.2
A	1859	APR	13 0143.5	75.7
B	1871	APR	14 0042.9	60.6
A	1884	APR	15 0137.2	74.1
BY	1896	APR	16 0036.5	59.0
A	1909	APR	17 0130.8	72.5
B	1921	APR	18 0030.1	57.4
A	1934	APR	19 0124.4	70.9
B	1946	APR	20 0023.7	55.8
A	1959	APR	21 0118.0	69.4
B	1971	APR	22 0017.4	54.2
AY	1984	APR	23 0111.6	67.8
B	1996	APR	24 0011.0	52.6
A	2009	APR	25 0105.3	66.2
B	2021	APR	26 0004.6	51.0
A	2034	APR	27 0058.9	64.6
B	2047	APR	28 0153.2	78.1
A	2059	APR	29 0052.5	63.0
BY	2072	APR	30 0146.8	76.5

SPACECRAFT TRANSPONDER FREQUENCIES

SPACECRAFT	UPLINK	DOWNLINK	BEACON
A-O-6	145.90 - 146.00 MHz	29.45 - 29.55 MHz	29.45 MHz
A-O-7			
(Mode A)	145.85 - 145.95 MHz	29.40 - 29.50 MHz	29.502 MHz
(Mode B/C)	432.125 - 432.175 MHz	145.975 - 145.925 MHz	145.972 MHz
(Mode A/D)	-	-	435.10 MHz

AMSAT-OSCAR 6

11613	MAY	1	2141.4	75.6
11625	MAY	2	2041.3	60.6
11638	MAY	3	2136.3	74.4
11650	MAY	4	2036.2	59.4
11663	MAY	5	2131.1	73.1
11675	MAY	6	2031.1	58.1
11688	MAY	7	2126.2	71.8
11702	MAY	8	2025.9	56.8
11713	MAY	9	2120.9	70.5
11725	MAY	10	2020.8	55.5
11738	MAY	11	2115.7	69.3
11750	MAY	12	2015.7	54.3
11763	MAY	13	2110.6	68.0
11775	MAY	14	2010.5	53.0
11788	MAY	15	2105.4	66.7
11800	MAY	16	2005.4	51.7
11813	MAY	17	2100.3	65.4
11825	MAY	18	2000.2	50.4
11838	MAY	19	2055.2	64.2
11851	MAY	20	2150.1	77.9
11863	MAY	21	2050.0	62.9
11876	MAY	22	2145.0	76.6
11888	MAY	23	2044.9	61.6
11901	MAY	24	2139.8	75.4
11913	MAY	25	2039.8	60.3
11926	MAY	26	2134.7	74.1
11938	MAY	27	2034.6	59.1
11951	MAY	28	2129.6	72.8
11963	MAY	29	2029.5	57.8
11976	MAY	31	2124.4	71.5
11988	MAY	31	2024.4	56.5

AMSAT-OSCAR 7

MODE	REV	DATE	TIME	Z	LONG	W
A	2284	MAY	1	2046.1	61.4	
B	2297	MAY	2	2140.4	70.9	
A	2139	MAY	3	2039.7	59.8	
B	2122	MAY	4	2130.0	73.4	
A	2134	MAY	5	2033.4	58.2	
B	2147	MAY	6	2127.6	71.8	
AY	2159	MAY	7	2027.0	56.6	
B	2172	MAY	8	2121.3	70.2	
A	2184	MAY	9	2020.6	55.0	
B	2197	MAY	10	2114.9	68.6	
A	2209	MAY	11	2014.2	53.4	
B	2222	MAY	12	2108.5	67.0	
A	2234	MAY	13	2027.8	51.8	
BY	2247	MAY	14	2122.1	65.4	
A	2259	MAY	15	2021.5	50.2	
B	2272	MAY	16	2055.7	63.8	
A	2285	MAY	17	2150.0	77.4	
B	2297	MAY	18	2049.4	62.2	
A	2310	MAY	19	2143.7	75.8	
B	2322	MAY	20	2043.0	60.6	
AY	2335	MAY	21	2137.3	74.2	
B	2347	MAY	22	2036.6	59.0	
A	2360	MAY	23	2130.9	72.8	
B	2372	MAY	24	2030.2	57.4	
A	2385	MAY	25	2124.5	71.0	
B	2397	MAY	26	2023.0	55.8	
A	2410	MAY	27	2118.1	69.4	
BY	2422	MAY	28	2017.5	54.2	
A	2435	MAY	29	2111.8	67.8	
B	2447	MAY	30	2011.1	52.6	
A	2450	MAY	31	2005.0	66.2	
B	2472	JUNE	1	2004.7	51.0	
A	2485	JUNE	2	2059.0	64.6	
B	2498	JUNE	3	2153.3	78.2	
AY	2510	JUNE	4	2052.6	63.0	
B	2523	JUNE	5	2146.9	76.6	
A	2535	JUNE	6	2046.2	61.4	
B	2548	JUNE	7	2140.5	75.0	
A	2560	JUNE	8	2039.9	59.8	
B	2573	JUNE	9	2134.1	73.4	
A	2585	JUNE	10	2033.5	58.2	
BY	2598	JUNE	11	2127.8	71.8	
A	2610	JUNE	12	2027.1	56.6	
B	2623	JUNE	13	2121.4	70.2	
A	2635	JUNE	14	2020.7	55.0	
B	2648	JUNE	15	2115.0	68.6	
A	2660	JUNE	16	2014.3	53.4	
B	2673	JUNE	17	2108.6	67.0	
AY	2685	JUNE	18	2008.0	51.8	
B	2698	JUNE	19	2102.2	65.4	
A	2710	JUNE	20	2001.4	50.2	
B	2723	JUNE	21	2055.9	63.8	
A	2736	JUNE	22	2150.1	77.4	
B	2748	JUNE	23	2049.5	62.2	
A	2761	JUNE	24	2143.8	75.8	
BY	2773	JUNE	25	2043.1	60.6	

AMSAT-OSCAR QSL BUREAUS

Tony Bailey, G3WPO, 5 Erin Way, Burgess Hill, RH15 9PN, England, forwards all incoming AMSAT-OSCAR 6 and 7 QSL cards destined for members of the British AMSAT affiliate.

Dennis Grinerod, WALEHF, 288 Grand St., Bridgeport, Conn. 06604, is serving as U.S. AMSAT QSL Manager in the following manner:

(a) All users to send him several SASE's which will be filled by incoming cards and mailed when full.

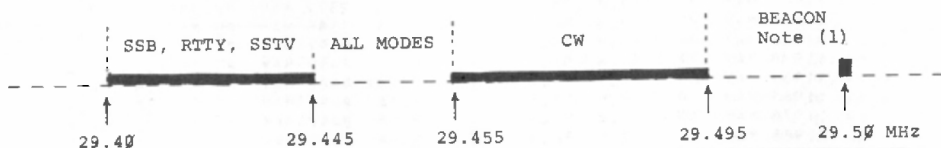
(b) DX - QSL's incoming and outgoing: Outgoing cards will be forwarded at a rate of 6¢ per card or 20 cards for a dollar.

(c) Domestic - QSL's: Send him your U.S. and Canadian cards in bulk. These will be sorted and placed in the SASE's.

TABLE OF ANTENNA POLARIZATIONS FOR AMSAT-OSCAR 7

<u>SYSTEM</u>	<u>POLARIZATION IN NORTHERN HEMISPHERE</u>	<u>POLARIZATION IN SOUTHERN HEMISPHERE</u>
2/10 Commun. <u>uplink</u>	Left-hand circular	Right-hand circular
2/10 Commun. <u>downlink</u>	Linear	Linear
70/2 Commun. <u>uplink</u>	Right-hand circular	Left-hand circular
70/2 Commun. <u>downlink</u>	Right-hand circular	Left-hand circular
435.1 MHz beacon	Left-hand circular	Right-hand circular
2304.1 MHz beacon	Right-hand circular	(antenna shielded from Earth)

AMSAT-OSCAR 7 2/10 TRANSPONDER BANDPLAN DOWNLINK FREQUENCIES



NOTES:

- (1) Guard Channel to avoid interference at any Doppler shift.
- (2) SSB use USB for uplink.
- (3) Recommend. ERP = 100 watts.

AMSAT LOGO STICKERS

These stickers are printed in black on a fluorescent red background. They are pressure sensitive and will stick to anything including QSL cards and envelopes.



They come in sheets of 48 and may be obtained from David Middleton, W7ZC, Box 303, Springdale, Utah 84767, for only \$1.25 postpaid.

All excess receipts over cost will be donated to the Amateur Satellite Program.

MINUTES OF THE BOARD OF DIRECTORS MEETING JANUARY 14, 1975

by Chuck Dorian, W3JPT, Secretary

The Board met at 8:30 p.m. at the NASA Goddard Space Flight Center, with the following in attendance:

Perry Klein, K3JTE
Jan King, W3GEY
Chuck Dorian, W3JPT

Joe Kasser, G3ZCZ/W3
Tom Clark, WA3LND*
Larry Kayser, VE3QB
(*via telephone)

Bill Hook, W3QBC
Bill Tynan, W3KMY
Bill Dunkerley, WA2INB*

The Board discussed the status of telephone expenditures, particularly the large expenses incurred following the launch of AMSAT-OSCAR 7 (\$500 paid for telephone charges in December). It was recognized that expenditures should return to normal; however, it was agreed to make maximum effort to hold long-distance calls to a minimum.

It was recognized that it was difficult to get all possible information distributed around the world immediately following launch of AMSAT-OSCAR 7. Although HF radio was used as much as possible, there were still individuals who did not obtain the information they were after. In order to attempt to improve this situation, it was agreed to have AMSAT's Director of Information and Publicity, G3ZCZ/W3, include latest information bulletins with his distribution of public relations photos and articles.

The Board agreed to the following appointments:

Assistant Treasurer - Ed Post, W3HKD
Assistant Membership Chairman - Larry Martin, W0QZB/3

In order to comply with the F.C.C. Rules and Regulations governing the citizenship requirements for amateur radio station licensees, a subsidiary organization known as the AMSAT Communications Association was established. The purpose of the Association is to hold, for AMSAT, radio licenses issued by the U.S. Federal Communications Commission, and to handle AMSAT communications.

Comment was received from G3IOR on the proposed dues increase, in particular the problem that a number of worldwide amateurs may have. After considerable discussion, it was agreed to solicit specific comment from other overseas members, and to further discuss the problem at the next Board meeting. It was generally agreed that some means should be found to hold membership dues down, such as greater use of bulk mailing, and local distribution within a country of AMSAT Newsletters. Also, centralized collection of dues in each country to avoid excessive currency conversion charges, and improved use of liaison representatives.

It was agreed that a status report on OSCAR 6 and 7 activities should be made to the F.C.C. The President was requested to arrange for an early meeting with the Amateur Division. Additionally, it was agreed to advise the F.C.C. of the need to perform an engineering checkout of the 2304 MHz beacon experiment, and to indicate that a formal request with supporting information would be submitted by AMSAT.

Recognition was taken of the F.C.C. proposal to restructure amateur licensing, contained in their Notice of Proposed Rule Making, Docket No. 20282. It was agreed to have a draft response as relates to satellite matters be prepared for consideration by the Board. Upon Board approval, it will be circulated to our membership for their guidance in their personal submissions on this issue.

A proposal to the F.C.C. (RM 2429) by R. E. Heimberger, W8VRZ, to authorize the use of ASCII code format for the transmission of radioteletype in the amateur bands was also discussed. It was agreed that support should be given to this concept. Larry Kayser is to prepare a suggested supporting letter and circulate it to the Board members for approval and submission to the F.C.C.

It was agreed that on Mode A days for OSCAR 7, Codestore may be used for operational and information messages relating to amateur satellite activities. This will generally be on an established scheduled basis.

The status of telecommand stations was discussed. The final turn-on date for the approved University of Surrey, England, station is to be clarified. It was agreed that a second and backup station was needed in Europe. A letter is to be

(Continued on Page 22)

MINUTES OF THE BOARD OF DIRECTORS MEETING

February 8, 1975

The Board met at 9:30 a.m. at the NASA Goddard Space Flight Center, with the following in attendance:

Perry Klein, K3JTE
Jan King, W3GEY
Larry Kayser, VE3QB

Dick Daniels, WA4DGU
Bill Dunkerley, WA2INB*
Tom Clark, WA3LND

Bob Carpenter, W3OTC
Chuck Dorian, W3JPT
Bill Tynan, W3KMV

(*by telephone)

The Board approved the appointment of an Audit Committee consisting of:

Bob Carpenter, W3OTC

Larry Martin, W0QZB/3

(third person, to be selected)

The Board decided to publish an article in the March *AMSAT Newsletter* which would outline a draft reply to the F.C.C. on the proposed restructuring of the U.S. amateur service. The article would invite the views of AMSAT members, and a submission to the F.C.C. would then be prepared. Individual members also are encouraged to submit their own replies. One Director, Larry Kayser, as a Canadian citizen, abstained from this decision.

The Board agreed to the transfer of \$8,000 from the savings accounts, representing reserves for Life Memberships, to an account with a liquid assets fund, in accordance with the recommendations from our financial advisor, Ray Soifer, K2QBW.

The Board agreed that the term "TRANSPONDER" would be used rather than repeater or translator to refer to the communications systems in OSCAR satellites.

The Board authorized the President to write a letter to Noel Eaton, President of IARU, outlining in a general way the areas of possible discussion between Mr. Eaton and the USSR amateur organization on launch of amateur satellites, and areas of a possible cooperative program with AMSAT.

A second printing of 3,000 copies of the first edition of the Talcott Mountain OSCAR curriculum book, with editorial changes, will be made shortly by ARRL. A revised second edition is planned for issue in about one year. Proposals for inclusion in the second edition are invited from members.

The concept of a space communicator's handbook was discussed, and there was general agreement that such a handbook was needed. Tom Clark agreed to undertake the task of finding an editor or compiler of material for such a handbook. Additionally, this person would be involved in the possible English version of the Japanese handbook recently published by JAMSAT and CQ Publications of Tokyo.

The subject of AMSAT's position relative to foreign AMSAT affiliate organizations received protracted discussion. Several proposals were advanced. Bill Tynan moved that foreign affiliates be allowed to set dues which they feel are appropriate to their individual local needs and that AMSAT bill them for the actual cost of servicing them (printing and shipping Newsletters, etc.). Other Board members favored establishing a policy whereby dues of any AMSAT affiliate would be no less than AMSAT dues but that AMSAT would reimburse the affiliate for actual costs occurred on behalf of AMSAT (mailing Newsletters within the country, etc.). The Board agreed that the administrative costs for postage paid by foreign affiliates in internal remailing of AMSAT Newsletters would be reimbursed by AMSAT. The question of AMSAT's policy with respect to dues for these foreign affiliates remained open. Bill Tynan asked that the record reflect his non-concurrence with the above decision. He reiterated his position that AMSAT should be flexible with respect to dues of foreign affiliates and that AMSAT confine its financial demands on affiliates to actual costs incurred in servicing them.

Larry Kayser, VE3QB, requested names of anyone who might be able to provide a floppy disc drive for his NOVA 800 computer. It was suggested that a request be published in the next *AMSAT Newsletter* (this notice will serve as the request).

There was an extended discussion of F.C.C. Docket 20271, Notice of Inquiry for U.S. participation in the 1979 General World Administrative Radio Conference. The President was directed to file a response with the F.C.C. that AMSAT desires to participate in this proceeding.

(Continued on Page 22)

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D. C. 20554

In the Matter of

An Inquiry relating to preparation)
for a General World Administrative)
Radio Conference of the Interna-)
tional Telecommunication Union to)
consider revision of the Radio)
Regulations.)

DOCKET NO. 20271

To: The Commission

COMMENTS OF

RADIO AMATEUR SATELLITE CORPORATION (AMSAT)

The Radio Amateur Satellite Corporation (AMSAT) respectfully submits the following comments in response to the Commission's Notice of Inquiry, released January 10, 1975 (FCC 75-6), relating to preparation for a General World Administrative Radio Conference of the ITU to consider revision of the Radio Regulations.

Specific Recommendations

The 1971 ITU World Administrative Radio Conference for Space Telecommunications formally recognized a new Amateur-satellite Service and began to establish definitions. The concept of an Amateur-satellite Service as a service separate and distinct from the Amateur Service is already proving to be cumbersome and restrictive. Some Administrations have even felt it necessary to consider resorting to special licenses for amateurs wishing to use space techniques. Such an approach would certainly inhibit the growth of amateur satellite communications, and would therefore be counterproductive to expanding and improving amateur techniques. For this reason, AMSAT is considering recommending that the U.S. ask for the elimination of the Amateur-satellite Service as a separate service, and that broader definitions be made in the Radio Regulations specifying that stations in the Amateur Service be permitted to use space techniques. Specific suggestions for broader definitions were given in AMSAT's response to the Commission's Docket 19852, Inquiry into Provisions for the Amateur-satellite Service in Part 97 of the Rules.

Several difficulties were experienced by AMSAT in attempting to secure licenses for recent amateur satellites. Specifically,

a) Frequencies in the worldwide amateur bands but not allocated to the Amateur-satellite Service have been unavailable for amateur satellite use. For example, a 432.15 MHz uplink frequency used in the AMSAT-OSCAR 7 satellite received objections that this uplink frequency, even though in a worldwide amateur band, could not be used by amateurs for satellite communications because it fell outside the 435-438 MHz region allocated to the Amateur-satellite Service.

b) Recent requests from the International Frequency Registration Board (IFRB) that amateur satellite systems be registered through the procedures of Article 9A and Appendix 1B of the ITU Radio Regulations are clearly impractical, inasmuch as some 3,000 amateur stations in over 90 countries would be involved. Amateur satellite stations should be exempted from registration with the IFRB, and a statement to this effect is needed in the Radio Regulations.

c) The segments 144-146 MHz, 435-438 MHz and 24.0-24.05 GHz constitute the only frequencies above 30 MHz presently allocated for amateur satellite use. Additional frequencies, such as 2300-2310 MHz, and other segments in shared amateur bands above 30 MHz, are needed to accommodate future amateur satellite activities.

Conclusion

AMSAT feels that the General WARC scheduled for 1979 is a very important milestone that will no doubt influence the development of amateur radio satellites for the remainder of the century. In view of this, we request the opportunity to participate in committees and working groups involved in preparation for the General WARC as it relates to amateur radio and satellites.

Respectfully submitted,
RADIO AMATEUR SATELLITE
CORPORATION (AMSAT)

P. O. Box 27
Washington, D. C. 20044
February 14, 1975

/s/PERRY I. KLEIN, President



"LETTERS AND COMMENTS"

Dear Editor:

I am writing this letter out of frustration. As of late (end of January) when trying to command OSCAR 6 & 7, I have found it very difficult to hear the beacon (not due to weakness but QRM). People evidently do not listen on their downlink frequency or they would hear the telemetry. My not hearing the appropriate beacon at the correct time leads to 3 things: (1) errors in commanding; (2) longer periods of time when the info on the beacons is incorrect, i.e., codestore on the 2-10 transponder instead of telemetry, etc.; and (3) shutting down the other satellite than the one that I am attempting to command to reduce QRM. This is not fair of course, to the person who is not QRMing the beacon, but it's the price everyone must pay if the QRMing continues.

There are certain functions that must be executed at certain times and it's rather frightening to do these things blindly when the end result could mean one or both satellites off for an orbit or two.

73,
Randy, VE2BYG

(And that goes for all future OVERLAP periods . . . Ed.)



I am very delighted to can work as one of first SP's on OSCAR 7 both transponders. Never thought I may to do it! Using rather simple equipment I have just worked 100 QSO's, 47 STN's, 21 countries and 3 continents on AO-7/B. Spacecrafts spin makes AOB/A some worse available than AO-6. Anyway, heartly congratulate you very enjoyable spacecraft! That's big-gest 1974 year amateur radio happening, I think.

Happy New Year!

731
SP9DH

Glad to receive your letter of December 8, although, due to the season mail problems, it took almost a month to reach me.

Enclosed* you will find a translation of the AMSAT-MEXICO Charter. We don't manage very well in legal English, but I hope all concepts are clear and understandable.

As comments to the charter, I want to add that, being such a small group (16) of members, we don't want a very complicated structure, as with these simple principles, we can rule our society, without removing the necessary flexibility.

At the beginning of the year, we had a General Assembly meeting, and held elections for the Board with the following results:

President: David Liberman, XE1TU
Secretary: Massimo Bachi, XE1XA
Treasurer: Carlos Gonzalez, XE1AZ
Vowel : Julio Garcia M., XE1RCP
Vowel : Rene Davila C., XE1GGD

As representative to the Liga Mexicana de Radio-Experimentadores AC, David Liberman, XE1TU.

There is great excitement since the formalization of AMSAT-MEXICO, and all members are helping each other to put their stations in the best possible shape. Many of the members are already active via satellite, and some are already working, making equipment for AMSAT-OSCAR 7 mode B.

I am sure many more good things will come out, and we thank you very much for the warm welcome. Hoping that the enclosed information will be helpful to you, please accept my best regards.

Sincerely,
David Liberman XE1TU
Bosque de Sayula 22
Mexico 10, D.F. MEXICO

*(not reproduced here)



I am the "Happy" owner of a Japanese 2-meter SSB-transceiver (Who isn't?) and this unit only receives the upper-side-band. Maybe you already got the message? Well, in this part of the world we did get some information about the OSCAR, were told that the repeater of 70cm-2m INVERTS the sideband, and, really, that's true, I only copy Donald Duck, when OSCAR is passing by. Now, WHY is the sideband inverted? As far as I am concerned, the whole entire World use upper-side-band even on the 2-meter band, and many transceivers on the market ("2-meters) being engineered for USB only.

All my sleepless nights might come to an end, if I was told the possible explanation on this matter, and I could tell others, to make them sleep well at night, and so on.

Sure, I know, that if LSB is sent off on the 70cm, it comes right down to my USB, but none do this.

Wishing you all the best from OZ-country,

OZ6WD

(Two reasons: (1) Some people use transverters from 2M to 70cm and can only use USB on uplink; (2) We want to be able to distinguish between terrestrial stns (who use USB) and OSCAR-repeated sigs (LSB). . Ed.)



I have received the A-O-7 Telemetry signals a number of times on 29.5 MHz and still remains the best copy received through OSCAR 7. The 2/10m translator seems to be of poor sensitivity except for a day, i.e., Dec. 15, 1974, and I had a full access of 25 min: (1600-1625Z). Otherwise, the access seems to be very poor (5 min).

I have heard signals of JA6CZD, OH5NW and YU2RIO (all 559) but was able to work only with ZE7JX. The signal strength of my signal repeated from OSCAR 7 is weaker than from OSCAR 6. The telemetry on 29.5 MHz is stronger than the translator signal.

73's
Suby, VU2UV



Gentlemen:

After seeing your articles and news releases, I felt sure proud that a group of fellow amateur radio operators made "headlines!" Later, I picked up a copy of "CQ" magazine; there was an article describing some of the efforts of a few hams, like Jan King, W3GEY and George Jacobs, W3ASK. Wow, what a job! Maybe the Air Force could take some lessons, but thanks to them, it was put in orbit! To everyone on your team--Congratulations! A job more than well done! One of the significant results was the global cooperation all amateurs took part in--how rewarding to realize this in today's world!

I am enclosing a check to join the AMSAT team, and I will try to promote it as well as I could.

Sincerely,
Joseph Franek
WB6NEX



South Carolina Again Active via W4GCB, WB4OKA, WA4LBO. PSE use AMSAT Bureau* or SASE until flood of QSL's dies down.

Also noted access to both 6 and 7 simultaneously in mid orbits of #857/10386 using WA3LND's printout and beaming midway headings--output was very distinct reverberated tone due to path length differences!

73,
David, WA4LBO

*(see the QSL Bureau announcement on page 14)

I was able to exchange reports with WJJSN & K2BZT cross satellite mode on 944B/10473 this evening. I also heard my signals briefly 919B/10448 (ref. orbit). The signals do not stay in--must be a roll of the satellites. They appear solidly & stay in for a minute or so then disappear. Best overhead. 53-55 good copy when they are there

73,
Fred, W2GN

(Anybody else have any reports or comments on double hop spacecraft relay? . . . Ed.)

Dear Sir;

Many thanks for the membership certificate and the past issue of the newsletter. I've learned more from that single issue than any of the publications received from other sources. I would like to clarify on a little more writing space, some of the comments in the description of experiments request. This came about while reading in the AMSAT Newsletter June 1974 page 26.

Quote "No further data reduction is necessary on your part; AMSAT will do the rest." unquote. This left me feeling a little disappointed since I feel it would be a world of education to draw up a few charts on 06 or 07. I think it would promote more telemetry copy for your benefit and for ours if some form of a decoding chart could be made available to those who request it. True, the decoded form does not have to be sent to AMSAT, we should continue to send in the raw figures. Your decoding will be much truer than ours. But with something in the ball park, our education, ability to sell the OSCAR program educationally speaking, would be much inline.

I think that I can further justify the \$150.00 or more which I just spent on antennas and equipment if I could do more than use up battery power calling stations. That's just part of what could be available to OSCAR users.

So, if you think my idea is just, I for one would like a copy of the decoding info in some part or another. I'm set up for teletype with a model 28, the ST3 TU and a R390 receiver with preamp. The antenna is a 2 element beam on ten meters. Made special for OSCAR frequencies. On two meters I am using a 4 element crossed yagi. I've got work to do on the elevation of antennas.

Wish to congratulate AMSAT on the successful launch of OSCAR 7 today.

Many thanks again,
73, Chuck WA7BRL

(The data has been published in the December Newsletter. . . Ed.)



Dear Perry,

I'd like to object to the increase in the dues with respect to overseas members. My experience of living overseas (up to 5 years ago) was that stateside salaries were about 3 to 4 times that of those in England, thus in terms of salary an increase of \$5.00 in annual dues is equivalent to an effective increase of \$15.00 to \$20.00 in time spent earning that money.

Thus, the overseas member would have to pay this inflated membership rate and add to that any local dues. Could not some way be found in which overseas AMSAT affiliate organizations set their own dues and pay AMSAT a rate based on their membership or other costs.

73's

Joe Kasser G3ZCZ

(. . . what do other overseas members and affiliate organizations think?. Ed)

Amigos y Colegos de AMSAT,

Con mucho gusto he comenzado a utilizar el OSCAR 7 en mis contactos, asi como yo, uno gran cantidad de estonciones 10m son en todos los modos.

Pasa muy bien por Argentina donde tiene muchos adeptos.

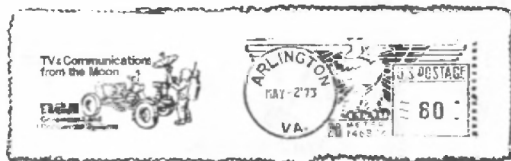
Les envio los datos de telemetria de una sola orbita, el resto ira en mi proxima correspondencia, ademas un articulo de una revista Argentina para que veon que los seguimos de carca.

Una lista, a demas de les frecuencias donde puedan en contrarnos y un mepo detallando los estaciones activas via satelite.

Espero me remitan informaciones para que podemos seguir de cerca nuestras activide des via OSCAR.

El saludo para uds, y esperemos que pronto podemos realizar una visita por AMSAT.

Marcelo A. Ippolito
LU4AEK



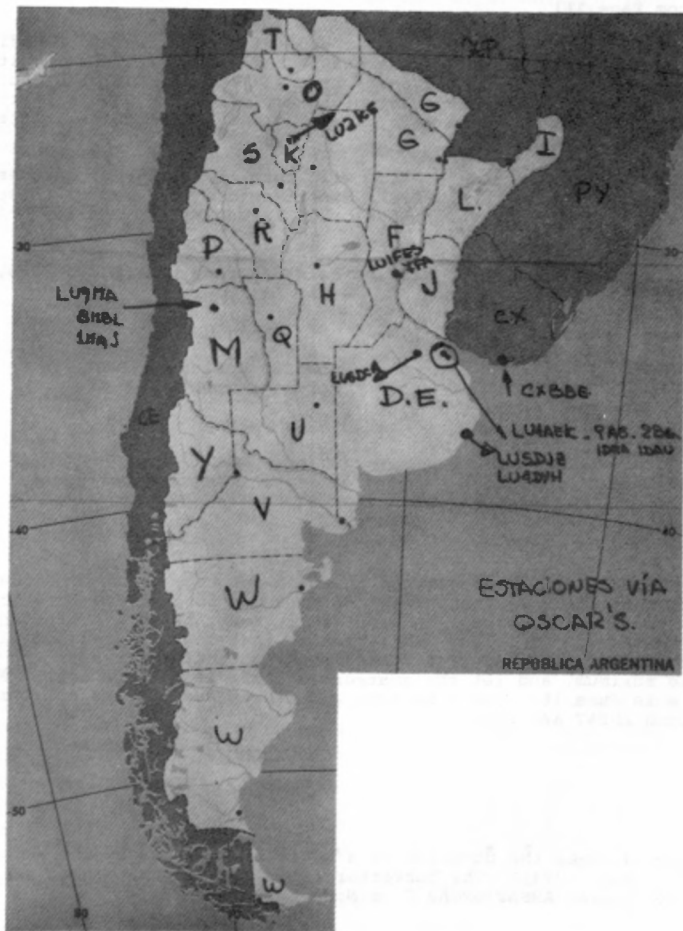
AMSAT-OSCAR 6/7 ORBITAL DATA CALENDAR

In cooperation with AMSAT, Skip Reymann W6PAJ has published an AMSAT-OSCAR Orbital data calendar containing all orbits for 1975 for both spacecraft designed so that it may be hung on a wall. It includes information on the operating schedules and frequencies for both spacecraft, and also the telemetry decoding equations.

Also included is step-by-step information on how to determine times of passage of the satellites.

It is available post paid for U.S. \$3.00 (or 20 IRC's). Overseas orders will be shipped by air mail. Payment should be made to Skip Reymann W6PAJ, P.O. Box 374, San Dimas, California 91773 U.S.A.

All excess receipts over cost will be donated to the Amateur Space Program.



(Continued from Page 15)

written to PA0WLB inquiring as to his availability for this purpose. The status of the telecommand equipment used by CN880 is to be determined by President Klein. It was agreed to hold in abeyance the offer of use of a site at Point Barrow, Alaska, pending development of a need.

The possibility of other countries launching amateur satellites was discussed. It was agreed to explore this subject with Noel Eaton, VE3CJ, President of IARU.

Recognition was taken of the annual Ham of the Year award at the Dayton Hamvention. It was agreed to submit a nomination for this award.

The proposal to offer a ten-countries worked via OSCAR award, with endorsements for additional countries, was discussed. It was agreed to have Bill Tynan and Joe Kasser develop a proposed set of rules, and to submit them to the Board for consideration.

Discussion of a possible AMSAT equipment marketing policy was deferred to a future meeting of the Board due to the lateness of the hour.

The Board adjourned at 12:05 a.m.

(Continued from Page 16)

Larry Kayser presented a proposal for a joint Australian and Canadian OSCAR satellite using the same general approach as AMSAT-OSCAR 7. This resulted in an extended discussion of problems and participants. The 435 MHz band would be used, at least for a beacon. The transponder might employ 2m-to-70cm or 2m-to-10cm, but not both. AMSAT support would be mainly in providing solar cells, batteries, etc. The launch would be about 1977.

Jan King presented a document which will form the basis for discussions at the March 1975 International AMSAT-OSCAR Experimenters Conference. A spacecraft in a highly elliptical, semi-synchronous orbit is envisioned. A long discussion followed.

A general membership meeting will be held Saturday, March 22, 1975, at which the experimenters will be present.

The meeting adjourned at 5:00 p.m.

Charles Dorian, W3JPT
Robert Carpenter, W3OTC

(continued from Page 10)

We further reiterate our desires that you not rely on AMSAT alone. The FCC has indicated that their responses will be tailored in large measure to the volume of mail received on each point -- thus, they regard this as a "referendum" or a "popularity contest." It is our understanding that the material contained in 20282 is the maximum that they are considering and that their approach was to throw out the maximum, and let the amateurs whittle it down to size. Remember, your deadline is June 16. Don't be late and please send copies of your own responses to both AMSAT and ARRL.

73 de WA3LND & K2QBW

AMSAT acknowledges the donation of a 2 meter converter by the Rochester VHF Group (see QST, Aug. 1973). The converter is now being put to good use by OA8V who has already copied AMSAT-OSCAR 7 on Mode B.

AMSAT GRATEFULLY ACKNOWLEDGES DONATIONS OF \$50.00 OR MORE FROM THE FOLLOWING NEW LIFE MEMBERS

LM-130	J. R. Knighton, WA4BCX	LM-170	George H. Gray, W9UWV
LM-131	G. W. Dowell, WA2LW	LM-171	George J. Herpich, WA3HVQ
LM-132	Harold D. Devoe, KL7MF	LM-172	Karl R. Medrow, W3FA
LM-133	Dr. Leo H. McMahon, VK2AC	LM-173	Leon G. S. Wood, W1WK
LM-134	Jay Mahoney, W6YDF	LM-174	Dr. B. G. Taylor, HB9ANY/GM3NZI
LM-135	E. R. Angle, WA6GUY	LM-175	J. A. Robbins, Arcadia, Calif.
LM-136	Peter L. Bell, VK3ZZF	LM-176	Edward F. Erickson, W2CVW
LM-137	Christoph Libowitzky, OE3LI	LM-177	Harry A. McConaghy, W3SW
LM-138	William J. Halligan, W4AK	LM-178	Brent A. Cater, W5FRG/WB8NVT
LM-139	Miguel Escoda Bonet, XE1RY	LM-179	Gustav H. Ruether, K9YVR/HR2GK
LM-140	Carl David Cook, WA6JUD	LM-180	L. O. Girouard, W6EX
LM-141	David Clingerman, W6OAL	LM-181	Gerard Carlier, Geneva, Switz.
LM-142	Herman Cone, 111, WB4DBB	LM-182	Donald F. Brown, W1JSM
LM-143	John Shew, WB4HQE	LM-183	Anthony F. Japha, W2EUO
LM-144	Joe Huie, K2PEY	LM-184	K. E. Sorensen, W9HWT
LM-145	David A. Leonard, WA7VKC	LM-185	R. W. Cox, W9KFB
LM-146	J. H. Ross, K4NTD	LM-186	Richard N. Coan, W3CPU
LM-147	Emil J. Sedik, W9NRN	LM-187	H. W. Evans, K2BZT
LM-148	Ki Negro, WA6QJP	LM-188	Roger W. Barton, W2LOG
LM-149	Kenneth M. Bourne, K9GHR	LM-189	D. B. Anderson, WB2GFO
LM-150	A. B. Buscaglia, K2KNV	LM-190	John O. Breitler, W5CTL
LM-151	Harold D. Reasoner, K5SXX	LM-191	Harvey Schack, WA2WWJ
LM-152	Katashi Nose, KH6IJ	LM-192	S. W. Walker, VE6SW
LM-153	Dr. W. L. Lamb, W9PHD	LM-193	Bobby Petrosky, WB5FMA
LM-154	Jerry W. Keefe, W9HAQ	LM-194	Jean-Jacques Delcourt, ON5PG
LM-155	Richard M. Nausch, Ridgewood, N.J.	LM-195	C. K. Mason, W9OII
LM-156	John L. Hill, W9ZWW	LM-196	Wendell F. Jackson, K4OJ
LM-157	H. J. Price, K3H2O	LM-197	Stephen A. Loeschner, WA9RJN
LM-158	F. A. Spurr, Jr., WB4YRB	LM-198	Rudolf H. Gmelin, VS6AX/DL3XB
LM-159	Michael M. Siegel, WB2PCP	LM-199	Cleophis C. Atkins, WB4CKB
LM-160	Richard Zwirko, K1HTV	LM-200	Robert N. Douglas, W5GEL
LM-161	J. A. Lambert, WA1UCQ	LM-201	C. Bodtcher-Hansen, OZ5FK
LM-162	George E. Hall, WB2TFH	LM-202	Joseph T. Olesik, WA1JQA
LM-163	Ted Witliff, WA5MOD/G5BJS	LM-203	Jon R. Barkhurst, WB8NTA
LM-164	Gordon E. Hardman, ZELDC	LM-204	A. W. Hacker, W9JI
LM-165	Dr. K. Otterson, DC6CJ	LM-205	Lawrence M. Bargebuhr, W1GUW
LM-166	T. D. Carroll, ZEZQL	LM-206	G. C. Wiseman, VK5ZAD/W2
LM-167	H. P. Shuch, WA6UAM	LM-207	Fred J. Elser, W6FB/KH6
LM-168	Roy F. Stevens, G2BVN	LM-208	Pierre Wanegue, FK8BB
LM-169	Samuel D. Staton, II, K4ITB	LM-209	Miguel J. Enciso, KP4DPN/VP2VBZ

HELP WANTED

• To spotlight AMSAT and OSCAR Satellite operations, we are collecting articles that we hope to publish initially as a group of articles in a well known amateur radio magazine or in the *AMSAT Newsletter*.

Several articles have already been written for this project but more are required. We are looking for technical articles and short articles on special techniques (equipment or operating) that have worked for you. Contact G3CZ/W3 or Gary Tater, W3HUC, 7925 Nottingham Way, Ellicott City, Md. 21043 for details.

• W3HUC is preparing an activity box table of station calls versus countries and states (US) worked for AMSAT-OSCAR 7 Mode B. If you wish to be listed send him (C/O AMSAT) a claim on your QSL card. Deadline for the next issue is April 15th, 1975.

• Help is needed in translating the new Japanese Space Handbook into English.
• Anyone who can help out in the manufacture of rubber stamps like the AMSAT-OSCAR 6 and AMSAT-OSCAR 7 ones is urged to contact AMSAT immediately.

• Punched (5 level) paper tapes of A-O-7 RTTY telemetry by W3HCF for computer processing. Write your call, time of start of tape, orbit number, and date on the tape (punched or in ink). Please send data if copy is at least 75% valid to Dr. Dave Mills, W3HCF, 3907 Beechwood Dr., Hyattsville, Md. 20782 USA.

• AMSAT is looking for an awards manager to (help) process the new SCC Award Program soon to be announced. If you can help out, write AMSAT.

COVER STORY: 2304 MHZ QUADRIFILAR ANTENNA FOR AMSAT-OSCAR 7

(preprinted from QST)

OSCAR 7 Project Manager Jan King, W3GEY, a NASA engineer, (seated R) and Randy Bricker review radiation characteristics of the 2304 MHz OSCAR 7 beacon antenna, while W2DU and W2WGH (standing, L-R) look on. The antenna is shown mounted on an OSCAR 7 test model at the RCA Space Center, attached to an ITOS weather satellite in the piggy-back launch configuration. In spite of its small size (0.7 oz.), this quadrifilar-design antenna now flying on OSCAR 7 boasts a tremendous performance for spacecraft use. The original design was developed by RCA Engineers Bricker, H. Rickert, and Walt Maxwell, W2DU, for use on the USAF's newest and highly successful spacecraft, the Block 5-D Meteorological Satellite, built by the RCA Astro-Electronics Division of Princeton, N.J. The antenna is circularly polarized, radiates hemispherically without requiring a ground plane, has a gain of 5 dBi on axis, down smoothly to 0.0 dBi 90 degrees off axis over entire 360 degrees around edge of hemisphere, with good polarization circularity at hemisphere edges. It is fed with an infinite balun, and has elements phased at 90 degrees with no phasing line. With a W2DU modification to operate at the 2304 MHz beacon frequency of OSCAR 7, this antenna was fabricated under the direction of Bricker and W2DU specifically for the OSCAR 7 amateur spacecraft, and presented to AMSAT by RCA, which designed and built the TIROS-ESSA-ITOS weather satellite series.

W2DU also served as consulting engineer for all antenna systems on AMSAT-OSCAR 7, and is well known to QST readers as the author of the current series, "Another Look at Reflections." RCA Technician Walt Ozmon, W2WGH, performed many of the impedance and radiation pattern measurements during the final testing of the antenna.

Scaled up for other frequencies, the quadrifilar would have similar performance characteristics. At 146 MHz, the quadrifilar would form a cylinder approximately 13 inches in diameter and 20 inches high, while at 432 MHz, diameter and height would be 4.4 inches and 6.8 inches, and at 29 MHz 5.5 feet and 8.4 feet, respectively. The circular polarization will reduce polarization fading caused by Faraday rotation of the electric field vector, especially on the 10 m downlink. A construction article is under way by W2DU.

PUBLICITY PHOTOS WANTED

Black and white photographs of users at their stations are wanted by the AMSAT Information and Publicity Department. If you have any such photos and would like to see them displayed in public, please send them to AMSAT in care of the Director of Information and Publicity.

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